

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	(Form PCT/ISA/2	of Transmittal of International Search Report 220) as well as, where applicable, item 5 below.
EYEM1100PCT	ACTION	
International application No.	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)
PCT/US 99/07934	14/04/1999	13/04/1998
Applicant		
EYEMATIC INTERFACES, INC.	at al	
ETERATO TATEM AGES, TAG.	et ai.	
This International Search Report has been according to Article 18. A copy is being tra	n prepared by this International Searching Aut ansmitted to the International Bureau.	hority and is transmitted to the applicant
This International Search Report consists X It is also accompanied by	of a total of3 sheets. a copy of each prior art document cited in this	s report.
Basis of the report		
 With regard to the language, the language in which it was filed, unl 	international search was carried out on the bar less otherwise indicated under this item.	sis of the international application in the
the international search w Authority (Rule 23.1(b)).	vas carried out on the basis of a translation of t	the international application furnished to this
was carried out on the basis of the	e sequence listing :	nternational application, the international search
	onal application in written form. emational application in computer readable forr	m
	this Authority in written form.	.11.
	this Authority in computer readble form.	
the statement that the sub	osequently furnished written sequence listing d is siled has been furnished.	loes not go beyond the disclosure in the
the statement that the info furnished	rmation recorded in computer readable form is	is identical to the written sequence listing has been
2. Certain claims were fou	nd unsearchable (See Box I).	
3. Unity of invention is lac	king (see Box II).	
4. With regard to the title,		
the text is approved as su	bmitted by the applicant.	
the text has been establis	hed by this Authority to read as follows:	
5. With regard to the abstract ,		
X the text is approved as su		
the text has been establish within one month from the	hed, according to Rule 38.2(b), by this Authoric date of mailing of this international search rep	ty as it appears in Box III. The applicant may, port, submit comments to this Authority.
6. The figure of the drawings to be publi	shed with the abstract is Figure No.	1
as suggested by the applic		None of the figures.
because the applicant faile		
because this figure better	characterizes the invention.	.

PCT

-0'D 21 JUL 2000

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference		See Notific	ation of Transmittal of International			
EYEM1100PCT	FOR FURTHER AC	T1011	Examination Report (Form PCT/IPEA/416)			
International application No.	International filing date (c	day/month/year)	Priority date (day/month/year)			
PCT/US99/07934	12/04/1999		13/04/1998			
International Patent Classification (IPC) G06K9/78	or national classification and IPC					
Applicant						
EYEMATIC INTERFACES, INC	et al.					
This international preliminary e and is transmitted to the applic		prepared by this Inte	ernational Preliminary Examining Authority			
2. This REPORT consists of a tot	al of Psheets, including this	s cover sheet.				
been amended and are the	☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).					
These annexes consist of a to	al of A shoots					
These afflexes consist of a to-	ai Oi 4 Sileets.		1			
3. This report contains indications	relating to the following iter	ns:				
Ⅰ 図 Basis of the report						
II ☐ Priority						
III 🛛 Non-establishmen	of opinion with regard to no	velty, inventive step	and industrial applicability			
IV □ Lack of unity of inv	ention					
V 🛮 Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement						
VI Certain document	s cited					
VII 🗵 Certain defects in	the international application					
_						
Date of submission of the demand		Date of completion o	f this report			
18/10/1999		19.07.2000				
Name and mailing address of the intern preliminary examining authority:	ational	Authorized officer	To present the land of the lan			
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 5	23656 epmu d	Herter, J	Name (3) And (4)			
Fax: +49 89 2399 - 4465		Telephone No. +49 8	9 2399 7478			

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/07934

I. Basis of the report

1. This report has been drawn on the basis of (substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.): Description, pages: as originally filed 1-19 Claims, No.: with telefax of 05/07/2000 1-13 Drawings, sheets: as originally filed 1/7-7/7 2. The amendments have resulted in the cancellation of: ☐ the description, pages: ☐ the claims, Nos.: sheets: ☐ the drawings, 3.
This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)): 4. Additional observations, if necessary: III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

Form PCT/IPEA/409 (Boxes I-VIII, Sheet 1) (January 1994)

because:

☐ the entire international application.

INTERNATIONAL PRELIMINARY **EXAMINATION REPORT**

International application No. PCT/US99/07934

		the said international ap not require an internatio	•		said claims Nos. relate to the following subject matter which does xamination (specify):
	×	unclear that no meaning			cate particular elements below) or said claims Nos. 11,12 are so be formed (specify):
		see separate sheet			
		the claims, or said claim could be formed.	ıs Nos.	are so in	adequately supported by the description that no meaningful opinior
		no international search	report h	as been e	established for the said claims Nos
			•		
•					
V.					ith regard to novelty, inventive step or industrial upporting such statement
1.	Sta	tement			
	Nov	velty (N)	Yes: No:	Claims Claims	1-10,13
	Inve	entive step (IS)	Yes: No:	Claims Claims	4,7-10 1-3,5,6,13
	Ind	ustrial applicability (IA)	Yes: No:	Claims Claims	1-10,13
2.	Cita	ations and explanations			
	see	separate sheet			
VII	l. Ce	rtain defects in the inte	rnation	al applic	ation

The following defects in the form or contents of the international application have been noted:

see separate sheet

EXAMINATION REPORT - SEPARATE SHEET

- Reference is made to the following documents: 1.
 - D1: Wiskott L et al: 'Face recognition by elastic bunch graph matching' IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 19, no. 7, 1 July 1997, pages 775-779, cited in the application
 - D2: Rae R et al: 'Recognition of human head orientation based on artificial neural networks' IEEE Transactions on Neural Networks. vol. 9, no. 2, 1 March 1998, pages 257-265
 - D3: US-A-5 581 625 (Connell Jonathan H) 3 December 1996
 - D4: US-A-5 550 928 (Lu Daozheng et al) 27 August 1996
- Item III: Non-establishment of opinion with regard to novelty, inventive step 2. and industrial applicability

As to claims 11 and 12:

Claims 11 and 12 are not clear due to the fact that they seem to be formulated as dependent claims while missing the reference to the claim to which they should refer. Since it is not possible to establish the exact extent of protection of these claims, no opinion will be established with regard to novelty, inventive step and industrial applicability.

- Item V: Reasoned statement under Article 35(2) with regard to novelty, 3. inventive step or industrial applicability; citations and explanations supporting such statement
- 3.1 The present application fails to meet the requirements of Article 33(3) PCT because the subject matter of claims 1 and 13 does not involve an inventive step, the reasons being as follows:

As to claim 1:

D2 discloses:

- A method for determining a state of a person (see page 257, right-hand column, line 27), characterized by:

EXAMINATION REPORT - SEPARATE SHEET

- automatically defining a region of interest in an image indicative of a predetermined feature of the person using an early vision cue (see page 257, right-hand column, lines 37-42 supported by page 258, left-hand column, lines 20-34 and figures 1 and 2)
- automatically finding the location of the predetermined feature in the defined region of interest (see page 258, left-hand column, line 31 - page 258, right-hand column, line 15):

D2 however does not explicitly disclose, that elastic bunch graph matching is used for finding the location of the predetermined feature in the defined region of interest.

The person skilled in the art working on the system of D2 will have to solve the inherent problem how to improve the step of finding the location of the predetermined feature in the defined region of interest.

To find a solution to this, the skilled person will have a look into document D1, which he will surely be aware of, since both D1 and D2 closely relate to the field of face recognition. In D1 elastic bunch graph matching is used for recognizing faces (see page 775, abstract, lines 1-11) and by combining both documents, the person skilled in the art will arrive at the full combination of features of present claim 1 without the exercise of an inventive step in the sense of Article 33(3) PCT.

As to claim 13:

Claim 13 is the corresponding apparatus claim for present method claim 1 and consequently also fails to meet the requirements of Article 33(3) PCT for lack of inventive step applying the reasoning for claim 1 above.

3.2 Dependent claims 2-12 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step, the reasons being as follows:

As to claim 2:

D2 further discloses:

- the step of defining the region of interest includes roughly locating the region of interest using the early vision cue and the step of finding the location of the predetermined feature commences at a rough location provided by the step of

defining the region of interest (see page 259, left-hand column, line 17 - page 259, right-hand column, line 25)

This is the wording of present claim 2, the subject matter of which fails to meet the requirements of Article 33(3) PCT for lack of inventive step applying the reasoning for claim 1 above.

As to claim 3:

D2 further discloses:

- the early vision cue includes at least one of stereovision, motion, color, convexity, topology, of structure (see page 259, left-hand column, lines 18-20).

This is the wording of present claim 3, the subject matter of which fails to meet the requirements of Article 33(3) PCT for lack of inventive step applying the reasoning for claims 1 and 2 above.

As to claim 5:

D2 further discloses:

- the step of defining the region of interest includes background suppression (see page 259, lines 27-28).

This is the wording of present claim 5, the subject matter of which fails to meet the requirements of Article 33(3) PCT for lack of inventive step applying the reasoning for claims 1 and 2 above.

As to claim 6:

D2 further discloses:

- the predetermined feature is the person's face (see page 259, lines 17-18)

D2 however does not explicitly disclose, that "the state of the person is described by nodes positions of facial elements".

This can also be found in document **D1**, which the person skilled in the art will surely be aware of (see argumentation for claim 1 above), together with the elastic bunch graph matching algorithm (see page 777, left-hand column, lines 22-24). Combining documents D1 and D2 the skilled person will arrive at claim 6 without

EXAMINATION REPORT - SEPARATE SHEET

the exercise of an inventive step (Article 33(3) PCT), applying the reasoning for claim 1 above.

The features of dependent claims 4 and 7-10 are not rendered obvious by the available prior art. The claims therefore meet the requirements of Articles 33(2) and 33(3) PCT.

Item VII: Certain defects in the international application 4.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D2, D3 and D4 is not mentioned in the description, nor are these documents identified therein.

Figures 3a, 4 and 6-8 of the drawings fail to meet the requirements of Rule 11 PCT because they contain grey-level elements. According to Rule 11.2(a) PCT all elements of the international application (i.e., the request, the description, the claims, the drawings, and the abstract) shall be so presented as to admit of direct reproduction by photography, electrostatic processes, photo offset, and microfilming, in any number of copies, and according to Rule 11.13(a) PCT drawings shall be executed in durable, black, sufficiently dense and dark, uniformly thick and well-defined, lines and strokes without colourings.

Contrary to Rule 6.2(b) PCT, reference signs are missing in figure 1, see page 4, lines 13-30 of the description.



RECEIVED

NOV 12 1999

WF/T.MEADOR

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

MEADOR, Terrance, A. Gray Cary Ware & Freidenrich, LLP Suite 1700 410 B Street San Diego, CA 92101-4297 ETATS-UNIS D'AMERIQUE		NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY (PCT Rules 59.3(e) and 61.1(b), first sentence and Administrative Instructions, Section 601(a))	
		Date of mailing (day/month/year)	0 5. 11. 99
Applicant's or agent's file reference EYEM1100PCT		ІМРО	RTANT NOTIFICATION
International application No. PCT/ US 99/ 07934	International filing date 12/04/1999		Priority date (day month year) 13/04/1998
Applicant	<u> </u>		
EYEMATIC INTERFACES, I	NC. et al.		
2. This date of receipt is: the actual date of receipt the actual date of receipt the date on which this At (Form PCT/IPEA/404), 3. ATTENTION: That date of re election(s) made in the demand months from the priority date phase must be performed with the PCT Applicant's Guide, Vol	of the demand by this A of the demand on behalf athority has, in response received the required corrective (or later in some Offices in 20 months from the pume II.	uthority (Rule 61.1(b)). of this Authority (Rul to the invitation to cor rections. ration of 19 months fro	·
4. Only where paragraph 3 applies, a c	copy of this notification h	nas been sent to the Int	ernational Bureau.

Name and mailing address of the IPEA/

European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465

ADAMS T M

Authorized officer

Tel. (+49-89) 2399-2668

Form PCT/IPEA/402 (July 1998) P20452

(02/11/1999).

PATENT COOPERATION TREATY

NOTIFICATION OF RECEIPT OF

(PCT Rule 24.2(a))

RECORD COPY

PCT

From the INTERNATIONAL BUREAU

To:

MEADOR, Terrance, A. Gray Cary Ware & Freidenrich, LLP **Suite 1700** 410 B Street San Diego, CA 92101-4297 ÉTATS-UNIS D'AMÉRIQUE

Date of mailing (day/month/year) 27 May 1999 (27.05.99)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference EYEM1100PCT	International application No. PCT/US99/07934

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

EYEMATIC INTERFACES, INC. (for all designated States except US) MAURER, Thomas et al (for US)

International filing date

14 April 1999 (14.04.99)

Priority date(s) claimed

13 April 1998 (13.04.98)

Date of receipt of the record copy by the International Bureau

10 May 1999 (10.05.99)

List of designated Offices

AP:GH,GM,KE,LS,MW,SD,SZ,UG,ZW EA: AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP:AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE

OA:BF,BJ,CF,CG,CI,CM,GA,GN,GW,ML,MR,NE,SN,TD,TG

National: AE,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CU,CZ,DE,DK,EE,ES,FI,GB,GD,GE, GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KP,KR,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,

NO,NZ,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,US,UZ,VN,YU,ZA,ZW

The international filing date being more than 12 months after the (earliest) priority date, the applicant has been invited by the receiving Office or the International Bureau to correct the priority claim. Failure to do so shall result in the priority claim being considered by the receiving Office or the International Bureau, as the case may be, not to have been made.

> The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer:

H. Zhou

Telephone No. (41-22) 338.83.38

Facsimile No. (41-22) 740.14.35



NOTIFICATION OF RECEIPT OF RECORD COPY

Date of mailing (day/month/year) 27 May 1999 (27.05.99)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference EYEM1100PCT	International application No. PCT/US99/07934
ATTENTION The applicant should carefully check the data appearing in to and the indications in the international application, the applicant in addition, the applicant's attention is drawn to the information is drawn to the information of the information of precautionary designations Tequirements regarding priority documents	
A copy of this Notification is being sent to the receiving Office an	d to the International Searching Authority.

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is 20 MONTHS from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, 30 MONTHS from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity to furnish the priority document within a time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

MEADOR, Terrance, A.
Gray Cary Ware & Freidenrich, LLP
Suite 1700
410 B Street
San Diego, CA 92101-4297
ÉTATS-UNIS D'AMÉRIQUE

IMPORTANT NOTIFICATION
ternational filing date (day/month/year) 14 April 1999 (14.04.99)
riority date (day/month/year) 13 April 1998 (13.04.98)

- The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the
 International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise
 indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority
 document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- 2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
- 3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- 4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date

Priority application No.

Country or regional Office or PCT receiving Office

Date of receipt of priority document

13 Apri 1998 (13.04.98)

60/081,615

US

17 May 1999 (17.05.99)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer

Carlos Naranjo



Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

SENT COOPERATION TR

To:

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

Assistant Commissioner for Patents United States Patent and Trademark Office

Box PCT Washington, D.C.20231 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
12 November 1999 (12.11.99)

International application No. PCT/US99/07934

International filing date (day/month/year) 12 April 1999 (12.04.99) Applicant's or agent's file reference EYEM1100PCT

Priority date (day/month/year) 13 April 1998 (13.04.98)

Applicant

MAURER, Thomas et al

1.	The designated Office is hereby notified of its election made: X in the demand filed with the International Preliminary Examining Authority on:
	18 October 1999 (18.10.99)
	in a notice effecting later election filed with the International Bureau on:
2.	The election X was was was not
***	made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).
	_

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Authorized officer

C. Carrié

Telephone No.: (41-22) 338.83.38

Facsimile No.: (41-22) 740.14.35